

What is claimed is:

1. An image forming process comprising the step of:

fixing a toner image on a recording medium,
the step of fixing including:

heating one or more heat-transfer media using
a heating element, and pressing the recording medium
bearing the toner image to one of the one or more
heat-transfer media using a pressurizing member,

wherein at least one of the one or more heat-transfer
media is a belt heat-transfer medium and the surface
thereof is applied with oil in an amount of 4 mg or less per
A4 size, and

wherein the toner image is formed with a toner
which comprises a binder resin and a releasing agent, has
 D_v of from 3.0 μm to 7.0 μm , a particle diameter
distribution D_v/D_n of from 1.00 to 1.25, in which D_v is a
weight-average particle diameter and D_n is a
number-average particle diameter, and an average shape
factor SF-1 of from 100 to 150, and contains toner particles
having a shape factor SF-1 of 160 or more in an amount of
10% by number or less.

2. An image forming process according to Claim 1,

wherein the weight-average particle diameter D_v of the toner is in the range of from 3.0 μm to 5.0 μm .

3. An image forming process according to Claim 1, wherein the particle diameter distribution D_v/D_n of the toner is in the range of from 1.00 to 1.20.

4. An image forming process according to Claim 1, wherein the average shape factor SF-1 of the toner is in the range of from 100 to 130.

5. An image forming process according to Claim 1, wherein a content of toner having a shape factor SF-1 of 150 or more in the toner is 10% by number or less.

6. An image forming process according to Claim 1, wherein the releasing agent has a melting point of from 60°C to 120°C and is contained in the toner in an amount of from 1% by weight to 20% by weight.

7. An image forming process according to Claim 1, wherein the releasing agent in each toner particle is dispersed in a form of particles,
wherein dispersed particles of the releasing agent having a particle diameter of from 0.1 μm to 3 μm occupy

80% by number or more of the total dispersed particles,
and

wherein the dispersed particles is concentrated in the vicinity of the surface of the toner particle as observed with a transmission electron microscope (TEM).

8. An image forming process according to Claim 1, wherein the toner particles have a storage modulus G' and a loss modulus G'' , wherein the storage modulus G' is in the range from 5.5×10^5 Pa to 5.5×10^7 Pa at 80°C and is in the range from 5.0×10^2 Pa to 1.0×10^4 Pa at 180°C , and a maximum of a loss tangent ($\tan\delta = G''/G'$) is in the range from 1.5 to 8.0 at temperature from 80°C to 130°C .

9. An image forming process according to Claim 1, wherein the binder resin has an acid value of from 1 mg-KOH/g to 50 mg-KOH/g.

10. An image forming process according to Claim 1, wherein the binder resin has a glass transition point of from 40°C to 60°C .

11. An image forming process according to Claim 1, wherein the binder resin comprises a polyester resin containing a tetrahydrofuran-soluble component,

the tetrahydrofuran-soluble component has a molecular weight distribution with a main peak at molecular weights of from 2,500 to 10,000 and with a number-average molecular weight of from 2,500 to 50,000.

12. An image forming process according to Claim 1, wherein the toner is a toner which is prepared by:

at least one of dissolving and dispersing, in an organic solvent, an isocyanate-containing polyester prepolymer, a compound capable at least one of undergoing elongation and crosslinking with the prepolymer, and at least one toner component to form one of a solution and dispersion;

subjecting one of the solution and the dispersion to at least one of a crosslinking reaction and an elongation reaction in an aqueous medium to form a dispersion; and removing the solvent from the dispersion.

13. An image forming process according to Claim 1, further comprising a step of supplying a toner to a latent electrostatic image formed on the photoconductor and applying an alternating field so that a toner image is formed to develop the latent electrostatic image.

14. An image forming apparatus, comprising:

a photoconductor;
a charging unit configured to charge the photoconductor;
an exposing unit configured to expose the charged photoconductor imagewise so as to form a latent electrostatic image on the photoconductor;
a developing unit configured to house a toner therein and supply the toner to the latent electrostatic image so as to form a toner image;
a transfer unit configured to transfer the toner image onto a recording medium; and
a fixing unit configured to heat and press the toner image so as to fix the toner image onto the recording medium,
wherein the fixing unit comprises:
one or more heat-transfer media wherein at least one of the heat-transfer media is a belt heat-transfer medium;
a heating element configured to heat the one or more heat-transfer media; and
a pressurizing member configured to press the recording medium and bring the recording medium to be in a contact with one of the one or more heat-transfer media,
wherein the toner comprise:
a binder resin; and

a releasing agent,
in which the toner has D_v of from 3.0 μm to 7.0 μm , a particle diameter distribution D_v/D_n of from 1.00 to 1.25, wherein D_v is a weight-average particle diameter and D_n is a number-average particle diameter, and an average shape factor SF-1 of from 100 to 150, and contains toner particles having a shape factor SF-1 of 160 or more in an amount of 10% by number or less.

15. An image forming apparatus according to Claim 14, further comprising an oil-application unit configured to apply oil to the surface of the belt heat-transfer medium in an amount of 4 mg or less per A4 size.

16. An image forming apparatus according to Claim 14, wherein the weight-average particle diameter D_v of the toner is in the range of from 3.0 μm to 5.0 μm .

17. An image forming apparatus according to Claim 14, wherein the particle diameter distribution D_v/D_n is in the range of from 1.00 to 1.20.

18. An image forming apparatus according to Claim 14, wherein the average shape factor SF-1 of the

toner is in the range of from 100 to 130.

19. An image forming apparatus according to Claim 14, wherein the content of toner particles having a shape factor SF-1 of 150 or more in the toner is 10% by number or less.

20. An image forming apparatus according to Claim 14, wherein the releasing agent has a melting point of 60°C to 120°C and is contained in the toner in an amount of from 1% by weight to 20% by weight.

21. An image forming apparatus according to Claim 14,
wherein the releasing agent in each toner particle is dispersed in a form of particles,

wherein dispersed particles of the releasing agent having an average particle diameter of 0.1 μm to 3 μm occupy 80% by number or more of the total dispersed particles, and

wherein the dispersed particles is concentrated in the vicinity of the surface of the toner particle as observed with a transmission electron microscope (TEM).

22. An image forming apparatus according to

Claim 14, wherein the toner has a storage modulus G' and a loss modulus G'' , wherein the storage modulus G' is in the range from 5.5×10^5 Pa to 5.5×10^7 Pa at 80°C and is in a range from 5.0×10^2 Pa to 1.0×10^4 Pa at 180°C , and a maximum of a loss tangent ($\tan\delta = G''/G'$) is in a range from 1.5 to 8.0 at temperature from 80°C to 130°C .

23. An image forming apparatus according to Claim 14, wherein the binder resin has an acid value of from 1 mg-KOH/g to 50 mg-KOH/g.

24. An image forming apparatus according to Claim 14, wherein the binder resin has a glass transition point of 40°C to 60°C .

25. An image forming apparatus according to Claim 14, wherein the binder resin comprises a polyester resin containing a tetrahydrofuran-soluble component, the tetrahydrofuran-soluble component has a molecular weight distribution with a main peak at molecular weights of 2,500 to 10,000 and with a number-average molecular weight of 2,500 to 50,000.

26. An image forming apparatus according to Claim 14, wherein the toner is a toner which is prepared

by:

at least one of dissolving and dispersing, in an organic solvent, an isocyanate-containing polyester prepolymer, a compound capable of undergoing elongation or crosslinking with the prepolymer, and at least one toner component to form one of a solution and a dispersion;

subjecting one of the solution and the dispersion to at least one of a crosslinking reaction and an elongation reaction in an aqueous medium to form a dispersion; and removing the solvent from the dispersion.

27. An image forming apparatus according to Claim 14, wherein the photoconductor is an amorphous silicon photoconductor.

28. An image forming apparatus according to Claim 14, wherein the charging unit comprises a charging member in which the charging member is subjected to be in contact with the photoconductor and be applied with voltage so as to charge the photoconductor.

29. A process cartridge comprising:
a photoconductor;
a developing unit configured to house a toner therein; and

at least one of

a charging unit; and

a cleaning unit,

wherein the toner comprises a binder resin and a releasing agent, has a weight-average particle diameter D_v of from 3.0 μm to 7.0 μm , a particle diameter distribution D_v/D_n of from 1.00 to 1.25, in which D_v is the weight-average particle diameter and D_n is a number-average particle diameter, and an average shape factor SF-1 of from 100 to 150 and contains toner particles having a shape factor SF-1 of 160 or more in an amount of 10% by number or less.